

The Fruit Flies (Diptera: Tephritidae) in the Fauna of Ardabil Province, with New Records for Iran

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Mohamadzade Namin S., Nozari J. & Najarpour A. The Fruit Flies (Diptera: Tephritidae) in the Fauna of Ardabil Province, with New Records for Iran. Summary. During the study of tephritid flies fauna in Ardabil Province (North-West of Iran), 31 species of 14 genera were found to occur in this region. *Terellia zerovae*, *Tephritis matricariae*, *Tephritis erdemlii* and *Tephritis cometa cometa* are recorded for the first time for Iranian fauna and 6 host plants reported for the first time.

Keywords: Diptera; Tephritidae; Iran; Ardabil Province; new records.

Мохамадзаде-Намін С., Нозари Дж. і Наджарпур А. Мухи-пестрокрылки (Diptera: Tephritidae) в фауні провінції Ардабиль, з новими указаннями видів для Ірану. Резюме. В ході изучения фауни провінції Ардабиль (северо-запад Ірану) встановлено, що в цьому районі зустрічається 31 вид из 14 родів мух-пестрокрылок. *Terellia zerovae*, *Tephritis matricariae*, *Tephritis erdemlii* и *Tephritis cometa cometa* отмечены впервые в фауне Ирана, а в качестве кормовых для нескольких видов пестрокрылок впервые отмечены 6 видов растений.

Ключевые слова: Diptera; Tephritidae; Иран; провинция Ардабиль; новые находки.

Мохамадзаде-Намін С., Нозарі Дж. і Наджарпур А. Мухи-осетниці (Diptera: Tephritidae) у фауні провінції Ардабиль, з новими знахідками видів для Ірану. Резюме. Під час вивчення фауни провінції Ардабиль (північний захід Ірану) встановлено, що в цьому районі зустрічається 31 вид з 14 родів мух-осетниць. *Terellia zerovae*, *Tephritis matricariae*, *Tephritis erdemlii* и *Tephritis cometa cometa* зареєстровані вперше в фауні Ірану, а як живителі для кількох видів осетниць вперше наведено 6 видів рослин.

Ключові слова: Diptera; Tephritidae; Иран; провинция Ардабиль; нові знахідки.

Introduction

The family Tephritidae is one of the most economically important Diptera families. More than 4000 species are found throughout the world, but the number of species is greatest in tropical regions (Foote & Steyskal, 1987; Korneyev, 2003).

Ardabil Province is located in North West of Iran, about 70 km from the Caspian Sea and 25 km from Republic of Azerbaijan's border with area about 18,000 km². The maximum temperature reaches to 35°C during the hot summer months. The winters are cold, with a temperature plummeting to -25 °C (provincial health center, unpublished data). Gilasian (2008) recorded *Acanthophilus helianthi*

Rossi, *Terellia gynaechroma* Hering, *Terellia luteola* Wiedemann and *Urophora mauritanica* Macquart from Ardabil Province but still the tephritid flies of this province remained poorly known.

Material and methods

Materials are collected by standard sweeping net and rearing from flower heads of asteraceous plants.

Species were identified according to Hendel (1927), Freidberg & Kugler (1989), Merz (1994) and Korneyev & White (1999, 2000).

All the material is deposited in the insect collection of Islamic Azad University Varamin-Pishva Branch (IAUV) and the first author's personal collection (SMNC).

Results

In this study, Thirty-one species from fourteen genera were collected in Ardabil province. *Terellia zerovae*, *Tephritis matricariae*, *Tephritis erdemlii* and *Tephritis cometa* are recorded for the first time for Iranian fauna and 28 species are new for this region.

The subfamilies, tribes, genera and species are listed in alphabetic order. Detailed morphological descriptions are not given. For further information, refer to the works of Hendel (1927), White (1988), Freidberg & Kugler (1989), White, Elson-Harris (1992), Merz (1994) and Korneyev & White (1999).

List of species

Subfamily Trypetinae

Tribe Carpomyini

Rhagoletis cerasi (Linnaeus, 1758)

Hendel, 1927; Korneyev & Merz, 1997.

Material. Namin, 14.07.2010, 1 ♀ (Mohamadzade & Najarpour) (SMNC).

Host plants. Cherries (*Prunus cerasus*, *P. avium*, *P. serotina* and *P. mahaleb*) (Rosaceae) and honeysuckles: *Lonicera tatarica*, *L. xylostemum* (Caprifoliaceae) (Hendel, 1927; White, Elson-Harris, 1992; Merz, 1994).

Distribution. Iran: N., S., W. and E. (Afshar, 1937); Europe, Russia, Kazakhstan, Georgia, (Norrbon *et al.*, 1999).

Subfamily Tephritinae

Tribe Terelliini

Terellia gynaechochroma (Hering, 1937)

Rikhter, 1988; Freidberg & Kugler, 1989 (as *Orellia lappae*).

Material. Khalkhal, on *Onopordum heterocanthum*, 13.07.2010, 1 ♂, 3 ♀; Sabalan mountain, 2700m, 14.07.2010, 1 ♀ (Mohamadzade & Najarpour) (IAUV and SMNC).

Host plants. *Onopordum acanthium*, *O. floccosum* and *O. cynarocephalum* (Rikhter, 1988; Freidberg & Kugler, 1989) (as *Orellia lappae*) and *Onopordum heterocanthum* (possible host plant).

Distribution. Iran: Ardabil, Fars, Kerman, Kurdistan, Qazvin and Tehran (Gilasian, 2007; Mohamadzade Namin *et al.*, 2010) Central and southern Europe, Cyprus, Israel,

Jordan and Syria (Norrbon *et al.*, 1999; Korneyev & Dirlbek, 2000).

Terellia sp. near *luteola* (Wiedemann, 1830)

Material. Ardabil, 5km to Meshkin Shahr, 1320m, N: 38°25.189, E: 47°40.976, reared from flower heads of *Carthamus lanatus* subsp. *turkestanicus*, date of collecting: 14.07.2010, date of exit: 25.07.2010, 4 ♂ (Mohamadzade & Najarpour) (SMNC).

Remark. Wing completely hyaline and without dark spots on abdominal tergites. There are four species of this group in Iran (*T. colon*, *T. luteola*, *T. tristicta* and *T. virpana*), but the morphological difference between populations of each species and their possible host plants aren't studied yet.

Terellia nigronota (Korneyev, 1985)

Korneyev, 1985; Korneyev, 2003.

Material. Sabalan mountain, 2700m, 14.07.2010, 1 ♀ (Mohamadzade & Najarpour) (SMNC).

Host plants. *Arctium* sp. (Korneyev, 2003).

Distribution. Iran: West Azerbaijan (Zarghani *et al.*, 2010 b); Russia, Georgia (Norrbon *et al.*, 1999).

Terellia serratulae (Linnaeus, 1758)

Becker, 1913; Dirlbek & Dirlbeková, 1974; Freidberg & Kugler, 1989.

Material. Namin, 1400m, N: 38°24.892, E: 48°28.065, reared from flower heads of *Carduus onopordioides*, date of collecting: 20.06.2010, date of exit: 13-28.06.2010, 3 ♂, 8 ♀ (Mohamadzade & Najarpour) (IAUV and SMNC).

Host plants. *Carduus acanthoides*, *Ca. defloratus*, *Ca. nutans*, *Cirsium arvense*, *Ci. vulgare*, *Ci. phyllocephalum* (Rikhter, 1988; Freidberg & Kugler, 1989; Merz, 1994) and *Carduus onopordioides* Fisch (new host plant).

Distribution. Iran: Gilan, Khorasan, Kohkiluyeh-Boyer Ahmad, Mazandaran, Tehran, West Azerbaijan (Becker, 1913; Gilasian, 2007; Mohamadzade Namin *et al.*, 2010) British Is., Scandinavia, Kazakhstan, Israel, Syria, Iraq and Africa (Norrbon *et al.*, 1999; Korneyev & Dirlbek, 2000).

Terellia uncinata White, 1989 (Fig. 1)

White, 1989.

Material. Ardabil, 15km to Sarein, 1430m, N: 38°10.601, E: 48°12.528, reared from flower heads of *Centaurea solstitialis*, date of collecting: 10.09.2009, date of exit: 17.09.2009, 5 ♂, 1 ♀ (Mohamadzade) (IAUV and SMNC).

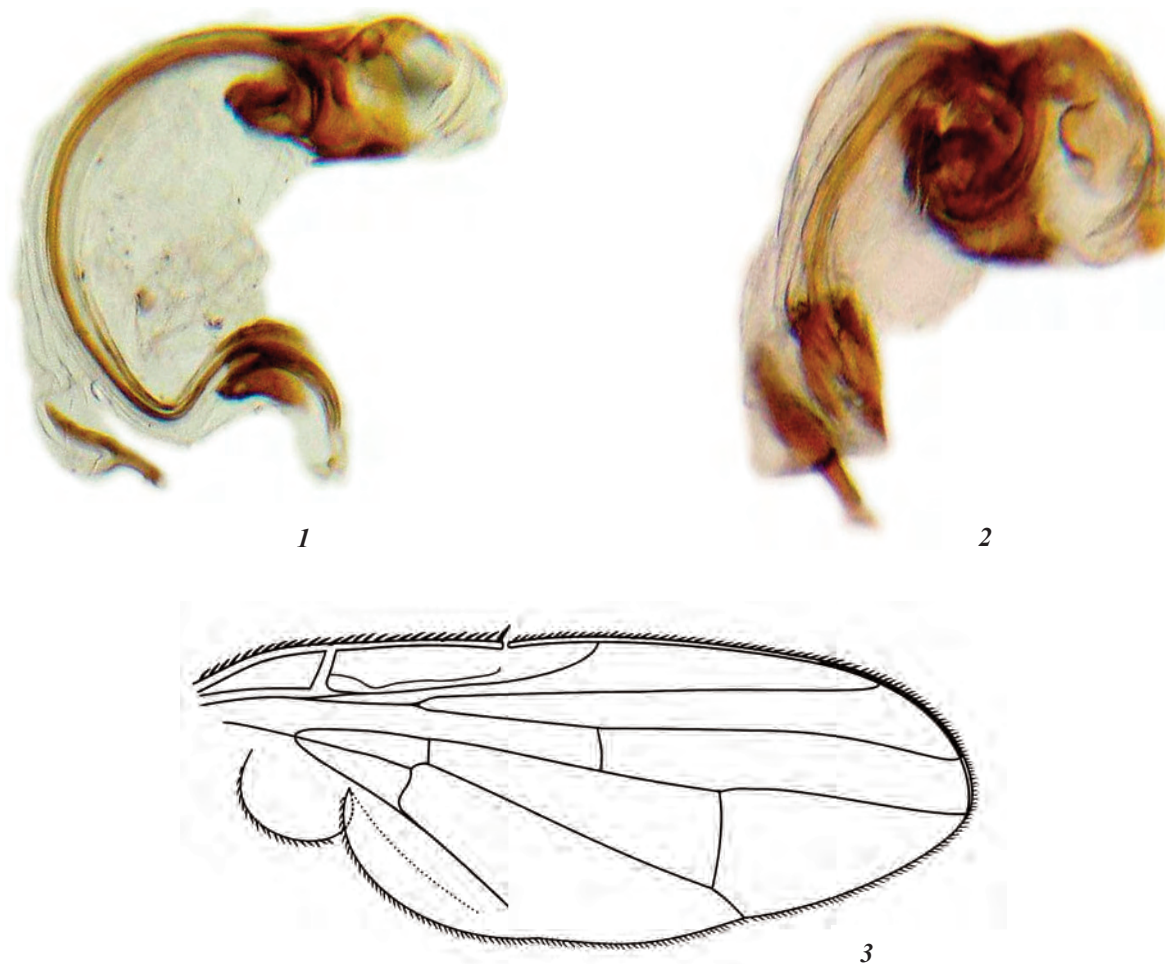
Host plants. *Centaurea nicaeensis* and *C. solstitialis* (White, 1989).

Distribution. Iran: Arak (Haji Ghorbni *et al.*, 2010), Kurdistan (Mohamadzade, unpublished data); Italy, Albania, Bulgaria, Greece and Turkey (Norrbon *et al.*, 1999).

Terellia zerovae Korneyev, 1985 (Fig. 2-3)

Korneyev, 1985; White, 1989.

Material. Namin, 1400m, N: 38°24.892, E: 48°28.065, reared from flower heads of *Centaurea aucheri*, date of collecting: 10.09.2009, date of exit: 14.09.2009, 3 ♂, 1 ♀ (Mohamadzade) (IAUV and SMNC).



Figs. 1–3. *Terellia uncinata* (1) and *T. zerovae* (2–3): glans of phallus (1–2) and wing (3)

Host plants. *Centaurea argentea*, *C. diffusa*, *C. maculosa*, *C. calcitrapa*, *C. iberica*, *C. solstitialis* (White, 1989) and *C. aucheri* (DC.) Wagenitz (new host plant).

Distribution. Romania, Greece, Turkey, Tadjikistan (Norrbon *et al.*, 1999) (new record for Iran).

Diagnosis. Wings completely hyaline (Fig. 3), abdominal tergites with white setae. *Terellia zerovae* is very similar to *T. uncinata* and differ by distiphallus without a long tubular extension (Figs. 1–2).

Tribe Myopitini

Urophora phaeocera (Hering, 1961)

Korneyev & White, 1999.

Material. Khalkhal, 1800m, 13.07.2010, 1 ♀ (Mohamadzade) (IAUV).

Host plants. The larvae develop in flower head of *Cousinia hermonis* (Korneyev & White, 1999).

Distribution. Iran: Chahar Mahal Bakhtiari (Gilasian & Merz, 2008), East Azerbaijan, Tehran, and Yazd (Mohamadzade, unpublished data); Turkey, Armenia, Azerbai-

jan, Middle East, Syria and Jordan (Norrbon *et al.*, 1999; Korneyev & Dirlbek, 2000).

Urophora quadrifasciata sjumorum Rohdendorf, 1934

Korneyev & White, 1999.

Material. Namin, 1400m, N: 38°24.892, E: 48°28.065, reared from flower heads of *Centaurea aucheri*, date of collecting: 10.09.2009, date of exit: 17-20.09.2009, 6 ♂, 7 ♀ (Mohamadzade); Namin, 14.07.2010, 5 ♂, 1 ♀; Sabalan mountain, 14.07.2010, 5 ♂, 7 ♀ (Mohamadzade & Najarpour) (IAUV and SMNC).

Host plants. *Centaurea calcitrapa* and *Centaurea iberica* (Korneyev & White, 1999) *C. aucheri* (DC.) Wagenitz (new host plant).

Distribution. Iran: West Azerbaijan, (Karimpoor & Merz, 2006) Tehran, Kurdistan, (Mohamadzade, unpublished data); Cyprus, Turkey, Armenia, Azerbaijan, Uzbekistan, Turkmenistan, Tajikistan, Kazakhstan, Kirghizia, Israel, Iran, Pakistan and w. China (Norrbon *et al.*, 1999; Korneyev & White, 1999).

Urophora solstitialis (Linnaeus, 1758)

Korneyev & White, 1999.

Material. Namin, Anbaran, 20.06.2010, 5 ♂, 5 ♀; Namin, 14.07.2010, 1 ♂, 5 ♀; Sabalan mountain, 2000m, 14.07.2010, 1 ♂; Sabalan

mountain, reared from flower heads of *Carduus* sp., date of collecting: 14.07.2010, date of exit: 20-23.07.2010, 2 ♂, 2 ♀ (Mohamadzade & Najarpour) (IAUV and SMNC).

Host plants. The larvae develop in flower heads of *Cirsium helenioides*, *Carduus acanthoides*, *Ca. crispus*, *Ca. defloratus*, *Ca. nigrescens*, *Ca. nutans* and *Ca. personata* (Korneyev & White, 2000).

Distribution. Iran: Mazandaran (Dirlbek, Dirlbekova, 1974), East Azerbaijan (Zarghani *et al.*, 2010 b); Italy, France, Britain, Scandinavia and Kazakhstan (Norrbom *et al.*, 1999).

Urophora terebrans (Loew, 1850)

Korneyev & White, 1999.

Material. Khalkhal, 2200m, reared from flower heads of *Onopordum heterocanthum*, date of collecting: 13.07.2010, date of exit: 19-23.07.2010, 4 ♂, 5 ♀; Namin, 1400m, N: 38°24.892, E: 48°28.065, 14.07.2010, 3 ♂, 1 ♀; Sabalan mountain, 2000m, 14.07.2010, 2 ♂, 4 ♀; reared from flower heads of *Cirsium aduncum*, date of collecting: 14.07.2010, date of exit: 18-25.07.2010, 7 ♂, 13 ♀ (Mohamadzade & Najarpour) (IAUV and SMNC).

Host plants. *Carlina vulgaris*, *Cirsium eriophorum*, *Ci. ukranicum*, *Cynara cardunculus*, *Onopordum acanthium* (Korneyev & White, 2000), *Cirsium lappaceum* (Mohamadzade *et al.*, 2010), *Cirsium aduncum* Fisch. & May. and *Onopordum heterocanthum* (new host plants).

Distribution. Iran: Tehran (Mohamadzade *et al.*, 2010); Europe, Russian, Armenia, Azerbaijan and Turkey (Norrbom *et al.*, 1999).

Tribe Noeetini

Ensina sonchi (Linnaeus, 1767)

Zaitzev, 1947.

Material. 1km west Namin, 1400m, N: 38°24.892, E: 48°28.065, 10.09.2009, 2 ♂, 2 ♀ (Mohamadzade) (IAUV and SMNC).

Host plants. The larvae develop in flower heads of *Chondrilla juncea*, *Helminthia echioides*, *Lactuca* spp., *Picris* sp. and *Scorzonera syriaca* (Freidberg & Kugler, 1989).

Distribution. Iran: Mazandaran (Dirlbek, Dirlbekova, 1974) and Tehran (Mohamadzade Namin *et al.*, 2010); Britain, Scandinavia, Africa, Saudi Arabia; Taiwan, Philippines and Japan (Norrbom *et al.*, 1999; Merz, Dawah, 2005).

Hypenidium roborowskii (Becker, 1908)

Hendel, 1927.

Material. 1km west Namin, 1400m, N: 38°24.892, E: 48°28.065, reared from flower heads of *Lactuca* sp., date of collecting: 10.09.2009, date of exit: 11-12.09.2009, 2 ♂, 1 ♀ (Mohamadzade) (IAUV and SMNC).

Host plants. *Lactuca* sp. (Mohamadzade *et al.*, 2010).

Distribution. Iran: Tehran (Mohamadzade Namin *et al.*, 2010) and Kurdistan (Mohamadzade, unpublished data); Syria, Jordan, Iraq, Afghanistan, Azerbaijan, Middle Asia, and China (Norrbom *et al.*, 1999; Korneyev & Dirlbek, 2000).

Tribe Tephritini

Acanthiophilus helianthi (Rossi, 1794)

Becker, 1913; Hendel, 1927; Freidberg & Kugler, 1989; Merz, 1994.

Material. Ardabil, 5 km to Meshkin shahr, 1400m, N: 38°25.189, E: 47°40.976, reared from *Carthamus lanatus*, date of collecting: 14.07.2010, date of exit: 22.07.2010, 1 ♂, 1 ♀; 1km west Namin, 1400m, N: 38°24.892, E: 48°28.065, 10.09.2009, 1 ♀ (Mohamadzade & Najarpour) (IAUV and SMNC).

Host plants. The larvae develop in flower heads of *Carthamus tinctorius*, *Cart. glaucus*, *Centaurea iberica* and *Carduus* sp. (Asteraceae) (Merz, 1994) *Cart. lanatus* Linnaeus (new host plant).

Distribution. Iran: Ardabil, West and East Azerbaijan, Fars, Golestan, Hamedan, Khuzestan, Sistan & Baluchestan, Tehran, Zanjan (Gilasian, 2006) Mazandaran (Dirlbek & Dirlbekova, 1974), Kurdistan and Yazd (Mohamadzade, unpublished data); Europe, Syria, Saudi Arabia, UAE, Afghanistan, Thailand and Africa (Norrbom *et al.*, 1999; Korneyev & Dirlbek, 2000; Merz & Dawah, 2005; Merz, 2008).

Campiglossa producta (Loew, 1844)

Hendel, 1927; Zaitzev, 1947; Freidberg & Kugler, 1989.

Material. Namin, 1400m, N: 38°24.892, E: 48°28.065, reared from *Lactuca* sp., date of collecting: 14.07.2010, date of exit: 24.07.2010, 1 ♂, 1 ♀; Sabalan mountain, 14.07.2010, 1 ♂; Namin, 14.07.2010, 2 ♂ (Mohamadzade & Najarpour) (IAUV and SMNC).

Host plants. *Chondrilla juncea*, *Crepis* spp., *Leontodon* spp., *Hieracium* spp., (Merz, 1994) and *Sonchus arvensis*.

Distribution. Iran: Fars, Golestan, Khuzestan, Lorestan, Tehran, West and East Azerbaijan (Gilasian, 2007) Europe, Middle Asia, Israel, Syria, Jordan, Iraq, Afghanistan, Africa and Canary Is. (Norrbom *et al.*, 1999; Korneyev & Dirlbek, 2000).

Dioxya bidentis (Robineau-Desvoidy, 1830)

Hendel, 1927; Hering, 1956; Freidberg & Kugler, 1989.

Material. Khalkhal, 13.007.2010, 5 ♂, 2 ♀; Namin, 1400m, N: 38°24.892, E: 48°28.065, 14.07.2010, 2 ♀; Sabalan mountain, 14.07.2010, 1 ♂, 2 ♀ (Mohamadzade & Najarpour) (IAUV and SMNC).

Host plants. The larvae develop in *Bidens* sp. and *Tagetes* sp. (Asteraceae) (Merz, 1994).

Distribution. East Azerbaijan (Zaitzev, 1947) Qazvin, Gilan (Gilasian, 2007), Tehran (Mohamadzade Namin *et al.*, 2010); Europe, Israel, Syria, Jordan, Iraq, Afghanistan, Africa and Canary Is. (Norrbom *et al.*, 1999; Korneyev & Dirlbek, 2000).

Euaresta bullans (Wiedemann, 1830)

Hendel, 1927; Richter, 1988; Freidberg & Kugler, 1989; Korneyev & Dirlbek, 2000.

Material. 1 km W Namin, 1400m, N: 38°24.892, E: 48°28.065, Reared from *Xanthium spinosum*, date of collecting: 16.09.2008, date of exit: 22.09.2008, 3 ♀; 5km east Meshkin shahr, 1300m, N: 38°25.189, E: 47°40.976, date of collecting: 16.09.2008, date of exit: 20.09.2008, 7 ♂, 7 ♀; 15km east Meshkin shahr, 1300m, 20.09.2008, 3 ♂, 5 ♀ (Mohamadzade) (IAUV).

Distribution. Iran: Ardabil, East and West Azerbaijan (Mohamadzade Namin & Nozari, in press); Southern Europe from Spain to Southern Ukraine, Turkey, Israel, North America, South America, Southern Africa, Australia (Norrbom *et al.*, 1999).

***Heringina gutatta* (Fallen, 1814)**

Rikhter, 1988.

Material. Khalkhal, 13.07.2010, 1 ♀ (Mohamadzade) (SMNC).**Host plants.** The larvae develop in flower head galls on *Anthemis arvensis*, *Leucanthemum vulgare*, *Cirsium palustre*, *Hieracium sabaudum* and *Helichrysum arenarium* (Rikhter, 1988; Merz, 1994).**Distribution.** Iran: East Azerbaijan (Zaitzev, 1947); Sweden, Finland, Ukraine and Kazakhstan (Norrbon *et al.*, 1999).***Sphenella marginata* (Fallén, 1814)**

Freidberg & Kugler, 1989.

Material. Khalkhal, 13.07.2010, 1 ♂; Sabalan mountain, 14.07.2010, 3 ♂, 1 ♀ (Mohamadzade & Najarpour) (IAUV and SMNC).**Host plants.** *Senecio alpinus*, *S. erucifolius*, *S. jacobaea*, *S. rupestris*, *S. viscosus*, *S. vulgaris* (Merz, 1994).**Distribution.** Iran: Kurdistan (Mohamadzade Namin & Nozari, in press) and Teharn (Mohamadzade, unpublished data); Europe, Asian Russia (West Siberia), Egypt, Israel, Afghanistan (Norrbon *et al.*, 1999; Freidberg & Kugler, 1989).***Tephritis bardanae* (Schrank, 1803)**

Hendel, 1927; Zaitzev, 1947; Dirlbek, 1980; Foote, 1984; Gilasian & Merz, 2008.

Material. Ardabil, 5 km to Sarein, 1600m, N: 38°07.410, E: 48°07.047, 11.09.2009, 1 ♀ (Mohamadzade) (SMNC).**Host plants.** *Arctium minus* (Merz, 1994).**Distribution.** Iran: Tehran (Gilasian & Merz, 2008); Europe, Britain, Caucasus and Transcaucasia Kazakhstan and Middle Asia. (Norrbon *et al.*, 1999).***Tephritis cometa cometa* (Loew, 1840)**

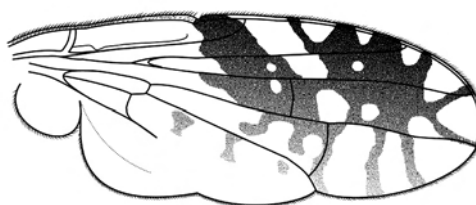
Hendel, 1927; Merz, 1994.

Material. Sabalan mountain, 27.07.2010, 1 ♀; Sabalan mountain, 2500m, reared from flower heads of *Cirsium* sp., date of collecting: 27.07.2010, date of exit: 4-9.08.2010, 4 ♂, 6 ♀ (Mohamadzade & Najarpour) (IAUV and SMNC).**Host plants.** Larvae in *Arnica montana*, *Aster bellidiflorum* and *Cirsium* spp. (White, 1988; Merz, 1994).**Distribution.** Iran: Tehran (Mohamadzade Namin *et al.*, 2010); Europe, Israel, Afghanistan, Kazakhstan, Mongolia, China (Norrbon *et al.*, 1999) (new subspecies for Iran).***Tephritis dioscurea* (Loew, 1856)**

Rikhter, 1988.

Material. Sabalan mountain, 2500m, 14.07.2010, 1 ♂ (Mohamadzade & Najarpour) (SMNC).**Host plants.** Larvae in flower heads of *Achillea millefolium*, *Artemisia absinthium*, *Ar. crithmifolia* and *Crepis* sp. (Rikhter, 1988).**Distribution.** Iran: West Azerbaijan (Zarghani *et al.*, 2010 a); Sweden and France to Kazakhstan and Russia (Norrbon *et al.*, 1999).***Tephritis erdemlii* Kutuk, 2008 (Fig. 4)**

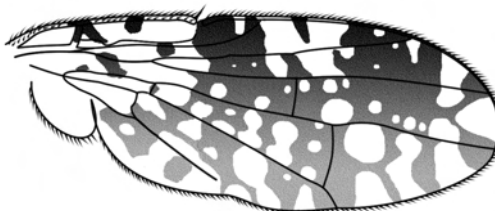
Kutuk, 2008.

Material. Sabalan mountain, 2500m, 14.07.2010, 1 ♀ on *Cirsium* sp. (Mohamadzade & Najarpour) (SMNC).**Host plants.** Probably *Cirsium vulgare* (Kutuk, 2008).**Distribution.** Turkey (Kutuk, 2008) (new record for Iran).**Diagnosis:** This species has long oviscapae and black setae. Wing pattern of *T. erdemlii* (Fig. 4) is similar to that of *T. acanthiophilopsis*, *T. cometa israelis* and *T. oedipus* but in *T. acanthiophilopsis* oviscapae is twice shorter; in *T. cometa israelis*, only one hyaline spot extending to vein R₂₊₃ and oviscapae is shorter; in *T. oedipus*, setae and oviscapae are yellowish and oviscapae is shorter; aculeus shape is quite a diagnostic character.Fig. 4. *Tephritis erdemlii*, wing.***Tephritis formosa* (Loew, 1844)**

Freidberg & Kugler, 1989.

Material. Namin, 1400m, N: 38°24.892, E: 48°28.065, 14.07.2010, 1 ♂ (Mohamadzade & Najarpour) (SMNC).**Host plants.** In Europe reared from *Sonchus asper*, *S. oleraceus*, *Hypochaeris radicata* and *Crepis virens* (Merz, 1994).**Distribution.** Iran: Mazandaran (Dirlbek, Dirlbekova, 1974), Tehran (Mohamadzade Namin *et al.*, 2010); Europe, except Scandinavia, to Israel (Norrbon *et al.*, 1999).***Tephritis hurvitzii* Freidberg, 1981**

Hendel, 1927; Freidberg & Kugler, 1989; Merz, 1994.

Material. Sabalan mountain, 2000m, 14.07.2010, 1 ♀ (Mohamadzade & Najarpour) (IAUV).**Host plants.** The larvae develop in stem galls on *Scorzonera syriaca* and *Tragopogon longirostris* (Freidberg & Kugler, 1989).**Distribution.** Iran: West Azerbaijan (Gilasian, 2007) and Tehran (Mohamadzade Namin *et al.*, 2010); Europe, Middle Asia, Israel, Syria, Jordan, Lebanon and Iraq (Norrbon *et al.*, 1999; Korneyev & Dirlbek, 2000).***Tephritis matricariae* (Loew, 1844) (Fig. 5)****Material.** Sabalan mountain, 2500m, 14.07.2010, 1 ♂ (Mohamadzade & Najarpour) (SMNC).**Host plants.** Flower heads of *Hieracium pilosella* and *H. lactuella* (Rikhter, 1988; Merz, 1994).**Distribution.** Netherlands, Austria, Balkans, Turkey, Egypt (Norrbon *et al.*, 1999) (new record for Iran).Fig. 5. *Tephritis matricariae*, wing.

Diagnosis. Wing pattern reticulated: 3 hyaline spots in cell r_{2+3} connected with 2 hyaline spots of cell r_1 ; 2 black spots at the end of R_{4+5} and M connected with main dark field (Fig. 5). Abdominal tergites with white setulae, except tergite 5 with row of long black marginal setae.

Tephritis postica (Loew, 1844)

Freidberg & Kugler, 1989.

Material. Sabalan mountain, 2500m, 14.07.2010, 3 ♂, 2 ♀ (Mohamadza & Najarpour) (IAUV and SMNC).

Host plants. *Onopordum acanthium* and *O. heterocanthum* in Iran (Mohamadza *et al.*, 2010)

Distribution. Iran: Esfahan, Hamedan, Kermanshah, Khorasan Razavi, Semnan, Tehran, Zanjan, (Gilasian, 2007) Kurdistan and Yazd (Mohamadza, unpublished data); Europe, Israel, Uzbekistan and Africa (Norrbom *et al.*, 1999).

Tephritis praecox (Loew, 1844)

Hendel, 1927; Freidberg & Kugler, 1989.

Material. Sabalan mountain, 2500m, 14.07.2010, 1 ♂ (Mohamadza & Najarpour) (SMNC).

Host plants. Flower heads of *Calendula arvensis* (Merz, 1994).

Distribution. Iran: Tehran (Mohamadza Namin *et al.*, 2010); Europe, Israel, Syria, Iraq, Uzbekistan and Africa (Norrbom *et al.*, 1999; Korneyev & Dirlbek, 2000).

Tephritomyia lauta (Loew, 1869)

Dirlbek, 1980.

Material. Khalkhal, 13.07.2010, 1 ♀; Sabalan mountain, 2500m, 14.07.2010, 1 ♀ (Mohamadza & Najarpour) (IAUV and SMNC).

Host plants. Flower heads of *Echinops viscosus* (Freidberg & Kugler, 1989).

Distribution. Iran: Tehran (Mohamadza Namin *et al.*, 2010); Greece, Israel, Tunisia and Egypt (Norrbom *et al.*, 1999).

Trupanea amoena (Frauenfeld, 1857)

Hendel, 1927; Zaitzev, 1947; Dirlbek, 1980; Freidberg & Kugler, 1989.

Material. Parsabad, 12.07.2010, 1 ♂ (Mohamadza) (IAUV).

Host plants. *Lactuca* sp., *Picris hieracioides*, *Sonchus* sp. (Merz, 1994).

Distribution. Iran: East Azerbaijan (Zaitzev, 1947), Khorasan Jonubi, Sistan and Baluchestan (Hering, 1956), Tehran (Gilasian, 2007); Europe, Israel, Syria, Iraq, Saudi Arabia and UAE (Norrbom *et al.*, 1999; Korneyev & Dirlbek, 2000; Merz & Dawah, 2005; Merz, 2008).

Trupanea stellata (Fuesslin, 1775)

Becker, 1913; Hendel, 1927; Zaitzev, 1947; Dirlbek, 1980; Freidberg & Kugler, 1989.

Material. 1 km west Namin, 1400m, N: 38°24.892, E: 48°28.065, 10.09.2010, 1 ♀; Ardabil, 15km to Meshkin shahr, 14.07.2010, 1 ♂ (Mohamadza & Najarpour) (IAUV and SMNC).

Host plants. The larvae develop in flower heads of *Senecio* spp., *Artemisia judaica*, *Inula graveolens* and *I. viscosa* in Israel (Freidberg & Kugler, 1989). In Europe reared from *Anthemis* spp., *Aster* sp., *Bidens* sp., *Centaurea* spp., *Crepis* spp., *Inula* sp., *Picris* sp., *Senecio* sp. and *Serratula* sp. (Merz, 1994).

Distribution. Iran: Kerman, Sistan and Baluchestan (Dirlbek, 1980), Kermanshah, Tehran, (Gilasian, 2007),

East and West Azerbaijan, Kurdistan and Yazd (Mohamadza, unpublished data); Europe, Israel, Iraq, Armenia, Saudi Arabia, India, Mongolia and Africa (Norrbom *et al.*, 1999; Korneyev & Dirlbek, 2000; Merz, Dawah, 2005).

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References

- Afshar, J. (1937). Harmful insects of fruit trees in Iran. *Journal of Agricultural Organization*, 1–11.
- Foot, R. H. & Steyskal, G. C. (1989). Tephritidae. In: McAlpine, J. F., Peterson, B. V., Shewell, G. E., Teskey, H. J., Vockeroth, J. R., Wood D. M., coords. *Manual of Nearctic Diptera*. Volume 2, Monograph of the Biosystematic Research Centre, No. 32. Agriculture Canada, Ottawa, 817–831.
- Freidberg, A. & Kugler, J. (1989). Diptera: Tephritidae. *Fauna Palaestina, Insecta*, 4, 1–212 + 8 plates.
- Gilasian, E. & Merz, B. (2008). The first report of three genera and fifteen species of Tephritidae (Diptera) from Iran. *Journal of Entomological Society of Iran*, 27(2), 11–14.
- Gilasian, E. (2007). Insects of Iran: The list of Diptera in the Hayk Mirzayans insect Museum of Iranian Research Institute of plant protection: Diptera (XXVIII): Tephritidae. *Iranian Research Institute of plant Protection Publication*, 15, 1–23.
- Haji Ghorbani, S., Goldasteh, Sh. & Mohamadza Namin, S. (2010). The first report of *Terellia uncinata* White, 1989 (Diptera: Tephritidae) from Iran. *Proceedings of 19th Iranian Plant Protection Congress*, 31 July–3 August, 139.
- Hendel, F. (1927). 49. Trypetidae. In: Lindner, E., ed. *Die Fliegen der palaearktischen Region*, Vol. 5, Stuttgart, 1–221 + 17 plates.
- Karimpoor, Y. & Merz, B. (2006). The first report of *Urophora quadricincta* and *Urophora xanthippe* (Dip. Tephritidae) from Iran. *Proceedings of the 17th Iranian plant protection congress*, 73.
- Korneyev, V. A. (2003). New and little-known Tephritidae (Diptera: Cy-clorrhapha) from Europe. *Vestnik zoologii*, 37(3), 3–12.
- Korneyev, V. A. & Merz, B. (1997). A new species of *Rhagoletis* Loew (Diptera: Tephritidae), with notes on Central Asian species. *Journal of Ukrainian entomological society*, 55–64.
- Korneyev, V. A. & Dirlbek, J. (2000). The fruit flies (Diptera: Tephritidae) of Syria, Jordan and Iraq. *Studia dipterologica*, 7(2), 463–482.
- Korneyev, V. A. & White, I. M. (1999). Tephritidae of the genus *Urophora* R.-D. (Diptera, Tephritidae) of east palaearctic: III. Key to palaearctic species. *Entomological Review*, 79(3), 464–482.
- Korneyev, V. A. & White, I. M. (2000). Tephritidae of the genus *Urophora* R.-D. (Diptera, Tephritidae) of east palaearctic: IV. Conclusion. *Entomological Review*, 80, 497–510.
- Kutuk, M. (2008). A new species of *Tephritis* Latreille (Diptera: Tephritidae) from Turkey. *Belgian Journal of Zoology*, 138 (2) : 132–134.
- Merz, B. (1994). *Diptera: Tephritidae*. Insecta Helvetica Fauna, HGE press, Geneva, 10, 1–198.

- Merz, B. & Dawah, A. (2005). Fruit flies (Diptera, Tephritidae) from Saudi Arabia, with descriptions of a new genus and six new species. *Revue Suisse De Zoologie*, 112 (4), 983–1028.
- Merz, B. (2008). Order Diptera, family Tephritidae. In: Van Harten, A., ed. *Arthropod fauna of the UAE*, Dar Al Ummah Printing Publishing, Distribution & Advertising, Abu Dhabi, 643–661.
- Mohamadzade Namin, S. & Nozari, J. (2010). The first report of two new genera of the subfamily Tephritinae (Diptera: Tephritidae) from Iran. *Journal of Iranian Entomological Society* (in press).
- Mohamadzade Namin, S., Nozari, J. & Rasoulilian, Gh. (2010). The fruit flies (Diptera: Tephritidae) in Tehran province, with new records for Iranian fauna. *Vestnik zoologii*, 44 (1), 20–31.
- Norrbom, A. L., Carroll, L. E., Thompson, F. C., White, I. M. & Freidberg, A. (1999). Systematic Database of Names. In: Thompson, F. C., ed. *Fruit Fly Expert Identification System and Systematic Information Database*, Myia, 65–299.
- Richter, V. A. (1988). Family Tephritidae (Trypetidae) - fruit flies. In: Bei-Bienko, G. Ya., ed. *Keys to the insects of the European part of the USSR. Vol. V. Diptera, Siphonaptera. Part 2*, Leiden, New York, 212–276.
- White, I. M. (1988). *Tephritid flies (Diptera: Tephritidae)*. Handbooks for identification on British insects, CAB International, London, 1–134.
- White, I. M. (1989). A new species of *Terellia* Robineau-Desvoidy associated with *Centaurea solstitialis* L. and a revision of the *Terellia virens* (Loew) species group (Diptera: Tephritidae). *CAB international Institute of Entomology*, 125, 53–61.
- White, I. M. & Marquardt, K. (1989). A revision of the genus *Chaetorellia* Hendel (Diptera: Tephritidae) including a new species associated with spotted knapweed, *Centaurea maculosa* Lam. (Asteraceae). *Bull. ent. Res.*, 79: 453–487.
- White, I. M. & Elson-Harris, M. M. (1992). *Fruit Flies of Economic Significance: Their Identification and Bionomics*. CAB International and ACIAR, London, 1–601.
- Zaitzev, F. A. (1947). The fruit fly fauna of the Caucasus and adjacent lands (Diptera, Trypetidae). *Tr. Zool. Inst. Akad. Nauk Gruz SSR*, 7, 1–16.
- Zarghani, E., Khaghaninia, S., Farshbaf pour Abad, R. & Gharali, B. (2010 a). Two genera and five species as new records for fruit flies fauna of Iran from East Azarbaijan province, *Munis Entomology and Zoology*, 5, 823–824.
- Zarghani, E., Khaghaninia, S., Korneyev, V., Kutuk, M., Farshbaf pour Abad, R., Gharali, B. & Gharajedaghi, Y. (2010 b). New records of fruit flies from Iran (Diptera: Tephritidae). *Munis Entomology and Zoology*, 5, 1202–1204.